Commonwealth of Kentucky
Division for Air Quality

PERMIT STATEMENT OF BASIS

Conditional Major, Operating
Permit: F-08-019
CTA Acoustics, Inc.
Corbin, KY 40701
June 4, 2008
D. Brian Ballard, P.E., Reviewer

SOURCE ID:	21-121-00062
AGENCY INTEREST:	45671
ACTIVITY:	APE20070001

SOURCE DESCRIPTION:

The Division received a permit renewal application for permit F-03-013 for the CTA Acoustics Corbin Kentucky facility on April 30, 2008. The initial permit was issued October 20, 2003 and will expire on October 20, 2008.

The affected facilities at the source are two fiberglass and resin blending rooms, two oven cure lines, one mold process line and natural gas fired make up air heating units. Both cure process lines are able to produce either a "semi-cured" or "fully-cured" mat insulation product. The difference between the two products relates to the amount of uncured binder and plastic still in the formed insulation mat. The semi-cure product is further processed through the mold press line. In this line, heated molds are used to create the final formed product and complete the thermosetting process for the phenolic resin. The mold press operations consist of 30 molds of various sizes to accommodate the over one hundred different product sizes and shapes currently produced at the Corbin, Kentucky facility.

The fully-cured product from the mold press operation is transferred from the mold line to the adjacent "water jet" cutting line for the final process step of cutting the molded part to the required geometry. The water jet process has no emissions. Waste from the water jet process will only be fully-cured (nonhazardous) solid waste and wastewater. The product from the fully-cured oven process (alternate Line 1 and 2 operations) is transferred directly the packaging area then shipment.

COMMENTS:

Dust collectors control particulate emissions from each of the process blend rooms. The assumed particulate control efficiency of the dust collectors is 99 percent. Each curing oven line has a thermal oxidizer installed to provide control and destruction of formaldehyde and phenol created from the heating and processing of high free phenol – phenolic resin. There are no emission controls on the mold press operations.

ASSUMPTIONS FOR EMISSION CALCULATIONS:

Toxics release inventory data was submitted by e-mail from Mr. John Zgoda, EHS Manager on May 8, 2008 and was used to calculate the source's potential emissions considering the assumptions listed below. The assumptions listed below are referenced from the August 2003 permit application.

Phenol, formaldehyde and ammonia are released as a result of heating phenolic resins during the curing process on lines 1, 2 and the mold line.

COMMENTS (CONTINUED):

No phenol is released from resins that have no phenol.

Phenol is only released from resins that have phenol present in the mixture or as free phenol listed on the MSDS.

Formaldehyde is created when the Hexamethylenetetramine (HEXA), a phenolic resin ingredient is heated during the curing process at either the curing ovens or the mold press operation. The HEXA content of resins used at the facility ranges from 4.5 percent to 6.75 percent.

No formaldehyde or ammonia is released from resins that have no HEXA content.

Ammonia and formaldehyde are only released from resins that have HEXA present in the mixture as listed on the MSDS.

Ammonia is not controlled by any process control device at the plant.

The thermal oxidizers shall be required to operate at a 3-hour average combustion chamber temperature equal to that established during a Division approved performance test if the permittee elects to take credit for the VOC emission reduction provided by the thermal oxidizers.

The permittee shall be required to determine the capture efficiency of the thermal oxidizers if the permittee elects to take credit for the VOC emission reduction achieved by the thermal oxidizers, using appropriate US EPA Reference Methods.

FULL CURE ASSUMPTIONS: All potential pollutants will be released at the oven during full cure.

SEMI CURE ASSUMPTIONS: 30 percent of potential pollutants will be released at the curing oven. 70 percent of potential pollutants will be released at the mold press operation. These assumptions are based on process studies conducted by CTA Acoustics, Inc. (reference, August 2003 permit application).

PHENOL RELEASE RATES: 50 percent of free phenol in resin will be released – based on Borden July 30, 2003 letter (See attachment.)

FORMALDEHYDE RELEASE RATES: 0.5 percent of HEXA content will be released as formaldehyde. 30 percent of HEXA content will be released as ammonia.

The maximum throughput of semi-cured fiberglass/resin through the mold press operation is 6,278 pounds per hour.

The maximum throughput of formed fiberglass/resin blend through the each cure line is 6,278 pounds per hour.

The maximum quantity of phenolic resin in the fiberglass/resin blend is 28 percent.

The maximum quantity of non-phenolic resin in the fiberglass/resin blend is 40 percent.

PARTICULATE EMISSIONS:

The assumptions listed below are referenced from the August 2003 permit application.

The blend rooms associated with each process line are a source of particulate emissions. It is assumed that there will be approximately 2 percent of the phenolic resin (which is delivered and used at the plant as a dry powder) available for release to the dust collector. The dust collector efficiency is assumed to be 99 percent.

The formed raw insulation material will be transferred from the blend and forming equipment in the blend room to the curing oven by a conveyor. Based on process tests conducted by CTA Acoustics, Inc., the particulate observed at the exit of the thermal oxidizer for the curing oven was approximately 1.6 pounds per hour with a throughput of raw materials of 2,800 pounds per hour. This factor was used to calculate the particulate release factor for the curing process. The PM release factor was found to be 0.25 percent of the resin processed.

COMMENTS (CONTINUED):

Since the fiberglass material is captured and controlled by the oven transfer conveyor, it is assumed that all PM available for release at the curing oven is from the phenolic resin powder. The potential to emit of PM from the cure ovens is calculated assuming the maximum throughput of formed fiberglass/resin blend is 6,278 pounds per hour with a resin content of 40 percent.

The particulate emissions at the molds are assumed to be the result of handling the semi-cured insulation mat. These emissions are assumed to be the same as the curing oven line emissions of 0.25 percent. The assumption of PM release is based on the potential release of material during heating and final curing of the phenolic resin binder in the semi-cure insulation.

Emissions of regulated pollutants from the natural gas fired make up air heating units and natural gas fired thermal oxidizers are determined using emission factors from AP-42. The emission factors for CO and NO_X are referenced from AP-42 (7/98), Table 1.4-1. Particulate Matter (PM), SO_2 and VOC emission factors are referenced from AP 42 (7/98), Table 1.4-2.

A site visit was conducted by the permit writer and Rick S. Shewekah, Surface Coating Section Supervisor, in support of this permit renewal on June 3, 2008. Mr. John Zgoda, CTA Acoustics EHS Manager provided us with a tour of the facility.

APPLICABLE REGULATIONS:

The opacity and mass emission standards of 401 KAR 59:010 apply to the mold press operations, blend rooms and cure ovens. The facility submitted air dispersion modeling with the August 2003 permit application which showed the emissions of air toxics did not result in concentrations of those pollutants beyond the property boundary that exceeded the Region IX PRG values.

401 KAR 63:020, *Potentially Hazardous Matter or Toxic Substances* The Division for Air Quality (Division) has performed air dispersion model screening of Hazardous Air Pollutants, (USC 7412(b)) that may be emitted by the facility based upon the process rates, material formulations, stack heights and other pertinent information provided by the applicant. Based upon this information, the Division has determined that the conditions outlined in this permit assure compliance with the requirements of 401 KAR 63:020.

The following is a summary of the potentially hazardous substances upon which screening was performed, the modeled worst case impacts, and the level of concern (LOC) that would have triggered additional review and/or more detailed modeling. Since only worst case screening modeling was performed, these results do not, nor are they intended to, portray actual risk:

Substance	Modeled Impact	Level of Concern
Formaldehyde	0.37 $\mu g/m^3$	9.8 $\mu g/m^3$
Phenol	1.86 $\mu g/m^3$	200 $\mu g/m^3$

EMISSION AND OPERATING CAPS DESCRIPTION:

The facility has accepted federally enforceable limits on the emissions of individual and combined Hazardous Air Pollutants (HAP). Individual HAP emissions shall not exceed 9.8 tons on a consecutive 12-month rolling total. Combined HAP emissions shall not exceed 22.5 tons on a consecutive 12-month rolling total. Particulate matter emissions from control devices or stacks shall not exceed 0.73 pounds per hour (3-hour average) for mold press operations and 7.3 pound per hour (3-hour average) for full or semi-cure mat insulation line operations. Visible emissions from control devices or stacks shall not exceed 20 percent opacity.

Permit F-03-013 contained a 90 ton per consecutive 12-month total emission limit for criteria pollutants. The 90 ton limit was found to not be necessary since the potential to emit of no individual criteria pollutant exceeds the major source threshold of 100 tons. Therefore, the 90 ton limit for individual criteria pollutants has been removed from the permit. The Division will reevaluate the potential to emit of the facility as necessary should the facility modify existing emissions sources or construct new emission sources.

PERIODIC MONITORING:

The permittee shall monitor visible emissions from stacks weekly and shall take corrective actions, perform Method 9 readings or shut processes down in order to comply with the opacity and mass standards as specified in the permit.
The permittee shall monitor raw material usages monthly.
The permittee shall monitor individual and combined HAP emissions monthly.
The permittee shall monitor dust collector pressure drop daily.
The permittee shall monitor the weight and type of resin being used on each line.

OPERATIONAL FLEXIBILITY:

The permittee is not required to conduct capture efficiency and destruction efficiency tests on the thermal oxidizers, however; the permittee must conduct a performance test on thermal oxidizer #1 and/or thermal oxidizer #2 should the permittee elect to take credit for the HAP/VOC emission reduction achieved by these control devices and; the permittee shall be required to determine the capture efficiency of the thermal oxidizers if the permittee elects to take credit for the HAP/VOC emission reduction achieved by the thermal oxidizers, using appropriate US EPA Reference Methods. In the event the permittee elects to take credit for the HAP/VOC emission reduction provided by the thermal oxidizers the permittee will be required to ensure that the average combustion chamber temperature in any 3-hour period does not fall below the combustion temperature established during the most recent performance test which demonstrated compliance.

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.